THE INVENTION CLAIMED IS:

1.   A method comprising:

selecting a first winning entry from one of a plurality of main calendars during a time unit, the first winning entry indicating a first pipe to be serviced during the time unit;

determining that no pipe flow corresponding to the winning first pipe currently needs to be serviced during the time unit;

selecting a second winning entry from the plurality of main calendars during the time unit, the second winning entry indicating a second pipe or an autonomous flow to be serviced during the time unit; and

servicing the autonomous flow or a pipe flow corresponding to the second winning entry during the time unit.

2.   The method of claim 1 wherein selecting the first entry from one of the plurality of main calendars during the time unit includes selecting the first winning entry from the highest priority calendar that indicates an entry that needs to be serviced.

3.   The method of claim 1 wherein the first winning entry includes a first entry of a chain, the chain includes a plurality of pipe entries scheduled to be serviced during the time unit.

4.   The method of claim 1 wherein selecting the first winning entry from one of the plurality of main calendars during the time unit includes selecting the first winning entry from one of the plurality of main calendars,

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each of which is of the different priority, during the time unit.

5.   The method of claim 1 wherein selecting the first winning entry from one of the plurality of main calendars during the time unit includes selecting the first winning entry from one of the plurality of main calendars during a plurality of clock cycles.

6.   The method of claim 1 wherein determining that no pipe flow corresponding to the winning first pipe currently needs to be serviced during the time unit includes accessing the pipe queue corresponding with the winning pipe for pipe flows that need to be serviced and determining that no pipe flow corresponding to the winning first pipe entry currently needs to be serviced during the time unit.

7.   The method of claim 3 wherein selecting the second winning entry from one of the plurality of main calendars during the time unit includes selecting a second entry of the chain.

8.   The method of claim 2 wherein selecting the second winning entry from one of the plurality of main calendars during the time unit includes selecting the second winning entry from a calendar of a lower priority than the highest priority calendar.

9.   The method of claim 8 wherein selecting the second winning entry from one of the plurality of main calendars during the time unit includes selecting the

second winning entry from a calendar of a lower priority than the highest priority calendar includes selecting the second winning entry from the highest priority calendar that has an entry indicating a pipe or autonomous flow to

5   be serviced during the time unit.

      10.   The method of claim 1 wherein servicing the autonomous flow or pipe flow corresponding to the second winning entry during the time unit includes accessing the

10   pipe queue corresponding to the second winning entry to select a pipe flow that needs to be serviced.

      11.   The method of claim 10 wherein servicing the autonomous flow or pipe flow corresponding to the second

15   winning entry during the time unit includes servicing the highest priority pipe flow that is in the queue the longest time.

      12.   A network processor system comprising:

20   at least one memory adapted to store one or more quality of service priority parameters corresponding to one or more pipes and pipe flows; and

            scheduler logic, coupled to the at least one memory, adapted to:

25   select a first winning entry from one of a plurality of main calendars during a time unit, the first winning entry indicating a first pipe to be serviced during the time unit;

            determine that no pipe flow

30   corresponding to the winning first pipe currently needs to be serviced during the time unit;

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select a second winning entry from the plurality of main calendars during the time unit, the second winning entry indicating a second pipe or autonomous flow to be serviced during the time unit; and

5   service the autonomous flow or pipe flow corresponding to the second winning entry during the time unit.

13.   The network processor system of claim 12
10   wherein the scheduler logic comprises:

a plurality of main calendars for storing at least one of an autonomous flow and a pipe that are scheduled to be serviced;

a plurality of secondary calendars for
15   storing pipe flows that are scheduled to be serviced; and

a pipe queue table for storing a winning pipe flow in a queue for a pipe to which the pipe flow corresponds.

20   14.   The network processor system of claim 12 wherein the scheduler logic further comprises:

enqueue and new attach logic for scheduling at least one of an autonomous flow and pipe flow to be serviced; and

25   dequeue and reattach logic for selecting at least one of an autonomous flow and a pipe flow to be serviced.

15.   A method comprising:
30   selecting a first winning entry from one of a plurality of main calendars during a time unit, the first

winning entry indicating a first pipe to be serviced during the time unit;

determining that no pipe flow corresponding to the winning first pipe currently needs to be serviced

5 during the time unit;

selecting a second winning entry from the plurality of main calendars during the time unit, the second winning entry indicating a second pipe to be serviced during the time unit; and

10 servicing a pipe flow corresponding to the second winning entry during the time unit.

16. A method comprising:

selecting a first winning entry from one of

15 a plurality of main calendars during a time unit, the first winning entry indicating a first pipe to be serviced during the time unit;

determining that no pipe flow corresponding to the winning first pipe currently needs to be serviced

20 during the time unit;

selecting a second winning entry from the plurality of main calendars during the time unit, the second winning entry indicating an autonomous flow to be serviced during the time unit; and

25 servicing the autonomous flow corresponding to the second winning entry during the time unit.

17. A network processor system comprising:

at least one memory adapted to store one or

30 more quality of service priority parameters corresponding to one or more pipes and pipe flows; and

scheduler logic, coupled to the at least one
memory, adapted to:

select a first winning entry from one
of a plurality of main calendars during a time unit, the
5   first winning entry indicating a first pipe to be serviced
during the time unit;

determine that no pipe flow
corresponding to the winning first pipe currently needs to
be serviced during the time unit;
10   select a second winning entry from the
plurality of main calendars during the time unit, the
second winning entry indicating a second pipe to be
serviced during the time unit; and

service a pipe flow corresponding to
15   the second winning entry during the time unit.

18. A network processor system comprising:

at least one memory adapted to store one or
more quality of service priority parameters corresponding
20   to one or more pipes and pipe flows; and

scheduler logic, coupled to the at least one
memory, adapted to:

select a first winning entry from one
of a plurality of main calendars during a time unit, the
25   first winning entry indicating a first pipe to be serviced
during the time unit;

determine that no pipe flow
corresponding to the winning first pipe currently needs to
be serviced during the time unit;
30   select a second winning entry from the
plurality of main calendars during the time unit, the

second winning entry indicating an autonomous flow to be
serviced during the time unit; and

                    service the autonomous flow
corresponding to the second winning entry during the time

5   unit.